Podokesaurus

Podokesaurus ("swift-footed lizard") was a small carnivorous dinosaur that lived during the Pliensbachian–Toarcian stages of the Early Jurassic Period, and as such is one of the earliest known dinosaurs to inhabit the eastern United States.[1]

Contents

Podokesaurus

Temporal range: Early Jurassic, 183 Ma

Pre€ € O S D C P T J K PgN

Holotype specimen

Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Clade:	Dinosauria
Clade:	Saurischia
Clade:	Theropoda
Superfamily:	†Coelophysoidea
Family:	†Podokesauridae Huene, 1914
Genus:	†*Podokesaurus* Talbot, 1911
Species:	†***P. holyokensis***
Binomial name	
†***Podokesaurus holyokensis*** Talbot, 1911	

Etymology

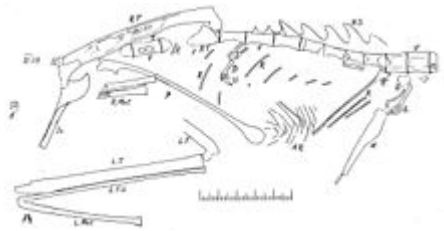
The generic name *Podokesaurus* is derived from Greek word *podōkēs* (ποδώκης) meaning "swift-footed", an epitheton often used by Homer in the Iliad to describe the hero Achilles, and *saura* (σαύρα) meaning "lizard"; thus "swift-footed lizard". The specific name refers to Holyoke, a city in Massachusetts, in the Connecticut River Valley.[2]

Description

Possible skull bones

The type specimen suggests that *Podokesaurus* was a small, bipedal carnivore was about 90 cm (3 ft) long and 0.3 m (1 ft) tall. Its upper leg bone (femur) measures 86 mm in length, and its lower leg bone (tibia) measures 104 mm in length. The tibia and other skeletal features of referred specimen BSNH 13656 (now on display at the Boston Museum of Science and given the number MOS 2001.248) are nearly three times longer than the type specimen described above. This suggests that *Podokesaurus* grew to about 9 feet (2,7 m) in length, provided that BSNH 13656 is in fact an example of this genus.[3]

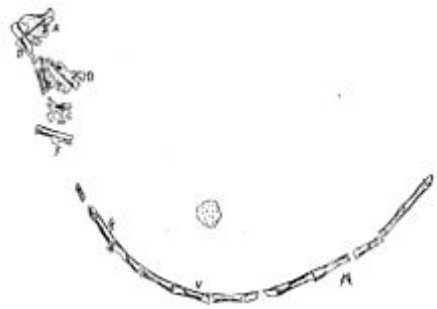
Discovery and occurrence



Interpretative drawing of the holotype

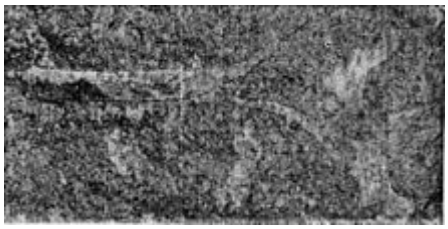
The only fossil of the type species *Podokesaurus holyokensis*, the full species name, was recovered in 1910 by Mount Holyoke College professor of geology and geography, Mignon Talbot. It consisted of a split boulder found by Talbot and her sister Elly on a hillock near to the college.[4] The hillock consists of material deposited by ice and having its probable origin in the Portland Formation in Massachusetts. The slab and counterslab showed a poorly preserved, incomplete skeleton. Most of the skull is lacking. Talbot made pictures of the stones and sought advice from Richard Swann Lull, an authoritative dinosaur expert. It was formally described in June 1911 by Talbot herself, who thereby became the first woman to name a non-avian dinosaur.[5] *Podokesaurus* was originally thought to have lived during the Late Triassic Period, which was later disproved. *Podokesaurus* was discovered in sediments deposited during the Pliensbachian–Toarcian stages of the Early Jurassic Period, between 190 and 174 million years ago.

In 1958 a second specimen, BSNH 13656 (MOS 2001.248), was referred to *P. holyokensis* by Edwin Harris Colbert and Donald Baird. It consists of natural casts in sandstone of a pubis, tibia, three ribs, and a possible vertebra, probably collected in Middletown, Connecticut. The bone casts are from an individual about three times longer than the type specimen.[3][6] The type, therefore, might have been a juvenile.

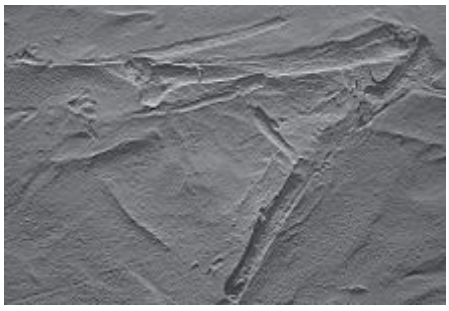


Skull and tail bones

Classification



Pelvic bones.



Replica of coelurosaur bone casts from Middletown, Connecticut

Because of the poor preservation of the original type material of *Podokesaurus* it is hard to find much difference when compared to the material of the much better known *Coelophysis*. From this Colbert concluded in 1964 that *Podokesaurus* was not a distinct genus but in fact a species of *Coelophysis*: *Coelophysis holyokensis*.[7] If so, it would by implication be a member of the Coelophysidae. However, the name *Podokesaurus* is still commonly used to refer to the material, while being assigned to a more general Coelophysoidea, as the identity is hard to prove and *Coelophysis* dates from a different period. The matter is complicated because all the original fossil material of *Podokesaurus holyokensis* was destroyed in a fire in 1917, and only casts remain, including those in the Division of Paleontology at the American Museum of Natural History in New York, the Peabody Museum of Natural History at Yale University, and the Amherst College Museum of Natural History (now the Beneski Museum).[8][9] Tykoski and Rowe noted that *Podokesaurus* likely possesses coelophysoid characters, but does not preserve any derived traits that would unite it with *Coelophysis*, thus *Podokesaurus* is a valid genus separate from *Coelophysis*. With respect to its taxonomic group, *Podokesaurus* has been assigned to Coelophysoidea incertae sedis by Tykoski and Rowe.[10]

Related genera

Podokesaurus shares the Coelophysidae taxon with *Camposaurus* and *Coelophysis*. It may also be related to *Liliensternus*, *Procompsognathus*, ?*Pterospondylus*, ?*Segisaurus* and ?*Gojirasaurus*.

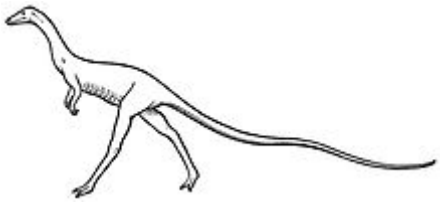
Distinguishing anatomical features

A diagnosis is a statement of the anatomical features of an organism (or group) that collectively distinguish it from all other organisms. Some, but not all, of the features in a diagnosis are also autapomorphies. An autapomorphy is a distinctive anatomical feature that is unique to a given organism or group.

According to Colbert and Baird (1958), *Podokesaurus* can be distinguished from *Coelophysis*, and other dinosaurs based on the fact that neural spines on its dorsal vertebrae are anteroposteriorly shorter than those in *Coelophysis bauri*. Colbert and Baird (1958) also noted that a hip bone, the ischium, is "differently shaped" in *Podokesaurus*, when compared to *Coelophysis*, but did not describe how it was different.[3]

Paleobiology

The skull is virtually unknown in *Podokesaurus* but based on the available material which suggests placement in the family Coelophysidae, it can be assumed that it was a small carnivorous theropod, that likely preyed on animals smaller than itself. Based on its skeletal morphology it can be ascertained that *Podokesaurus* was bipedal and, contrary to early illustrations, ran with its tail extended and off the ground. It has been estimated that *Podokesaurus* could run at 14 – 19 km/h (9 - 12 mph), hence the name "swift-footed lizard".



Early illustration

See also

- Timeline of coelophysoid research

References

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2. Talbot, M., 1911, *Podokesaurus holyokensis, a new dinosaur of the Connecticut Valley*: American Journal of Science, v. 31, p. 469-479
3. Colbert E.H. and Baird, D., 1958, "Coelurosaur bone casts from the Connecticut Valley Triassic", *Am. Mus. Novitates* **1901**: 1-11
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8. "Main Page" (http://paleo.amnh.org/). *American Museum of Natural History*. Retrieved 8 August 2013.
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10. Tykoski, R.S. & Rowe, T. (2004). "Ceratosauria". In: Weishampel, D.B., Dodson, P., & Osmolska, H. (Eds.) *The Dinosauria* (2nd edition). Berkeley: University of California Press. Pp. 47–70

External links

- Coelophysis (https://web.archive.org/web/20041101054239/http://www.isgs.uiuc.edu/faq/dino-faqs/pdq256.html) - relation to Late Triassic *Coelophysis*, from the Illinois State Geographical Survey
- Coelophysis (https://web.archive.org/web/20051106024841/http://www.nhm.org/journey/prehist/saur/coelophysis.html) - relation to Late Triassic *Coelophysis*, from the Natural History Museum of Los Angeles